

NASA Facilities

NASA Safety Directors Meeting

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Code JX

Agenda

Recap of Facilities Studies

Condition of Infrastructure

Center Facilities Failures

Summary

Recap of Facility Studies Since 1990

1. Code R Review 1990
2. Code M Bechtel Study 1991
3. Paul Holloway Study 1992
4. National Facility Study 1993
5. Zero Base Review 1994
6. NASA-DoD Study 1995
7. Facility Investment Study (FIS) 1996
8. Code M validation of the FIS 1997
9. Facility Safety Review 1998
10. Airfield Safety Review 1999
11. Core Capability Study 1999
12. Shuttle Infrastructure Review 1999/2000
13. Facility Policy Initiative 2000
14. DoD Facility Programming Study 2001 (underway)

All studies confirmed in one way or another: Large and growing capital repair needs and impacts resulting from underfunded maintenance

Condition of Infrastructure

Revitalization Requirements > \$2 Billion per aborted Facility Policy Initiative

Revitalization rate averages > 140 years FY 95 - 06

Chronic Maintenance underfunding has:

- Accelerated and increased revitalization needs

- Blunted the effectiveness of Reliability Centered Maintenance

- Established high risk of facility failure (\$1B in Deferred Maintenance)

NASA's physical plant in many areas is obsolete with safety & health implications

Basic strengths of materials issue: stress fracture, fatigue, corrosion

Center Facilities Failures

- JSC - Street light electrical faults
- JSC - Roof leaks in Bldg. 36
- JSC - Termites in roof of Bldg. 31
- JSC - Failure of feeder cables to Chamber A in Bldg. 32
- JSC - Failed steam & chilled water isolation valves in tunnel
- WSTF - Corrosion and failure of UG conduits and water lines
- MSFC - HQ Bldg. Water line failure
- MSFC - Crane failures in Bldg. 4619
- MAF - Failure of under-slab pressurized line
- KSC - ISS west bridge crane failed
- KSC - Failure of feeder cables to Shuttle PAPI system
- KSC - VAB roof failures
- KSC - Pad A HP gas system substation failure
- KSC - Failure of feeder cables to Industrial Area
- LaRC - 50 yr. old UG electrical feeder failures
- WFF - Boiler failures
- WFF - UG chilled water line failures
- JPL - HESSI shaker table failure

SSC A-2 Test Stand Safety Railing Corrosion



SSC B-2 Test Stand Corrosion Failure



SSC Roadway Pavement Failures



SSC General Corrosion



GSFC Parkway Bridge

Failed Parapet Concrete & Exposed Rebar



GSFC Parkway Bridge

Spalled Concrete & Expansion Joints



GSFC Parkway Bridge Cracked Underdeck Beams



WSTF UG Conduit Corrosion Failure



WSTF UG Alcohol Line Patches



WSTF UG Line Corrosion Failure



JSC Hangar 990, Ellington Field Fire Suppression System



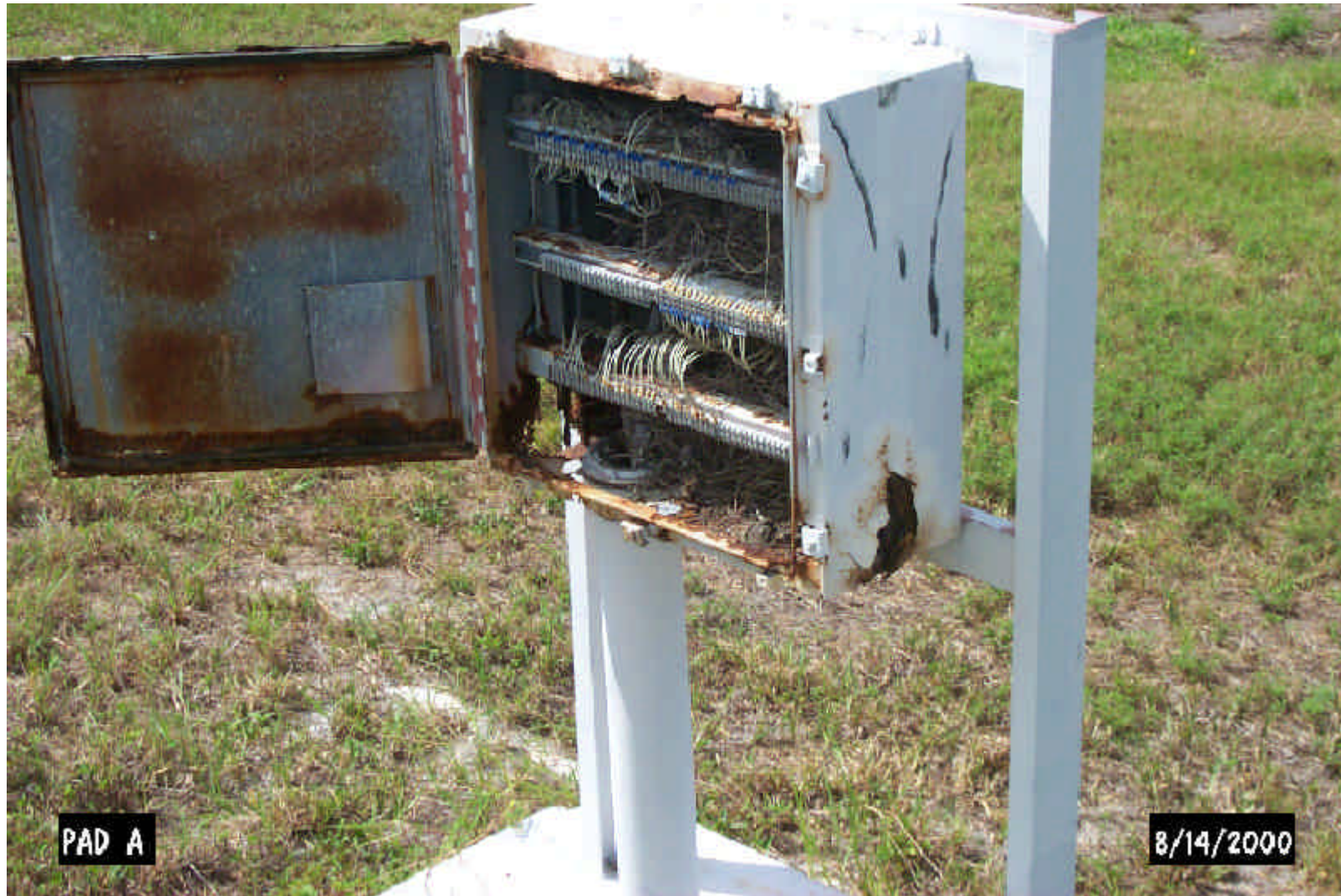
KSC Launch Pad Service Structure Cracked Concrete Foundation



KSC Base Of Launch Pad Spalling Concrete



KSC Electrical Enclosure Corrosion



KSC Cable Tray Corrosion At Launch Complex



KSC Cable Tray Corrosion At Launch Complex



KSC Electrical Junction Box Destroyed By Corrosion



KSC Launch Pad Cable Tray Riser Corrosion



KSC Launch Pad Tower Support Severe Corrosion



KSC Launch Pad ECS Cooling Water Filter Severe Corrosion



KSC Launch Tower Struct. Steel Corrosion



KSC Launch Tower Struct. Steel Corrosion



KSC VAB Struct. Steel Bolted Connections Transfer Aisle Doors



KSC Crawler/Transporter Struct. Steel Corrosion Failure



KSC Launch Tower Struct. Steel Connections



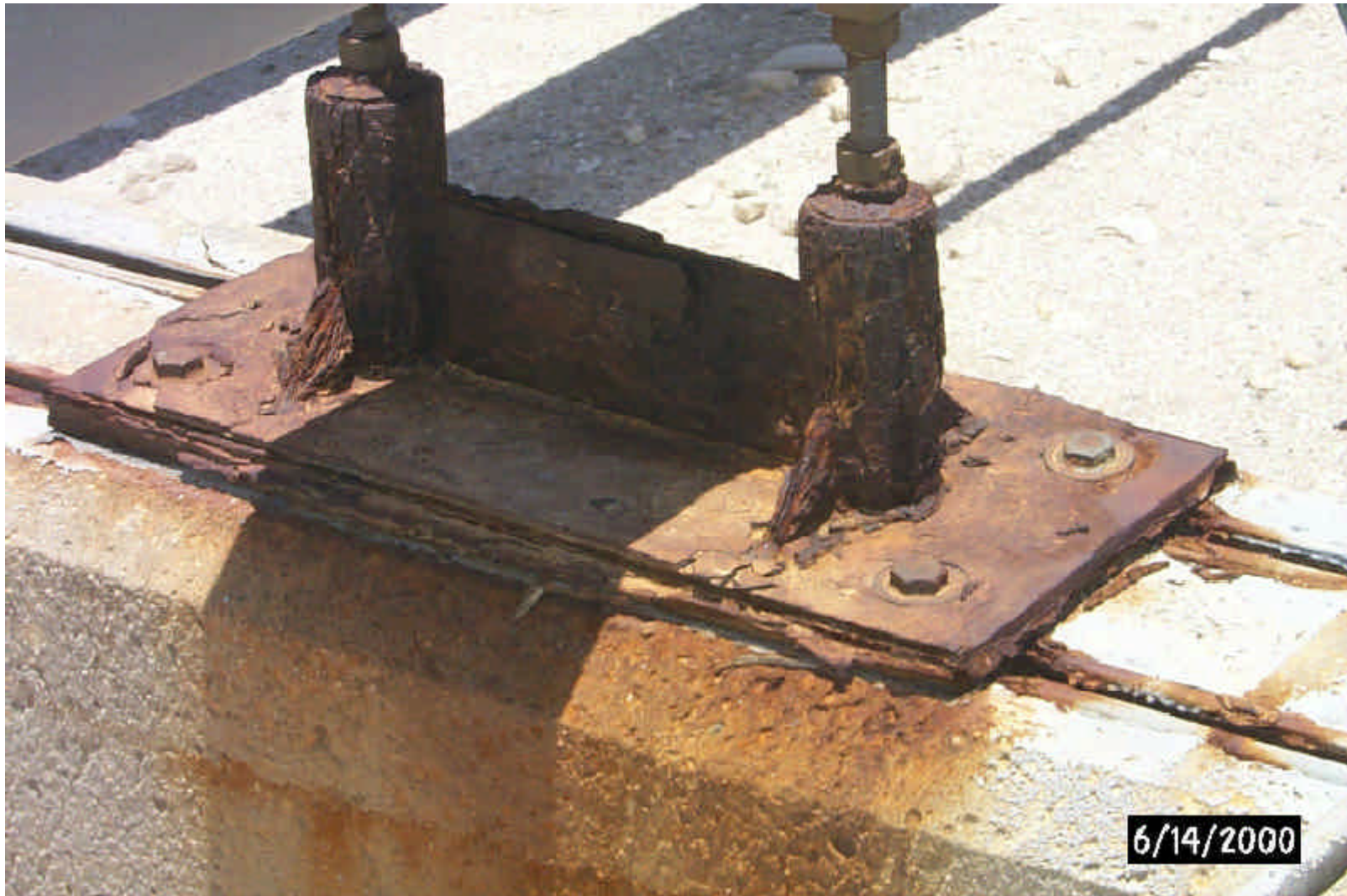
KSC Launch Tower Struct. Steel Box Beam Corrosion



KSC Launch Pad Steel Grating Corrosion



KSC Liq. Hydrogen Line Support Corrosion



KSC MLP Handrail Corrosion



MSFC Condenser & Pumps



MSFC Chilled Water Pump



MSFC Heat Exchanger



MSFC Hot Water Pump



Summary

Condition of the facility infrastructure has a big impact on safety

Safety and Facility Offices need to work together to keep up the vigilance

Design safety features into facilities

When talking safety don't forget facilities